

# Motorola

# AUTO RADIO

MODELS  
5M  
5M-12

## S E R V I C E M A N U A L

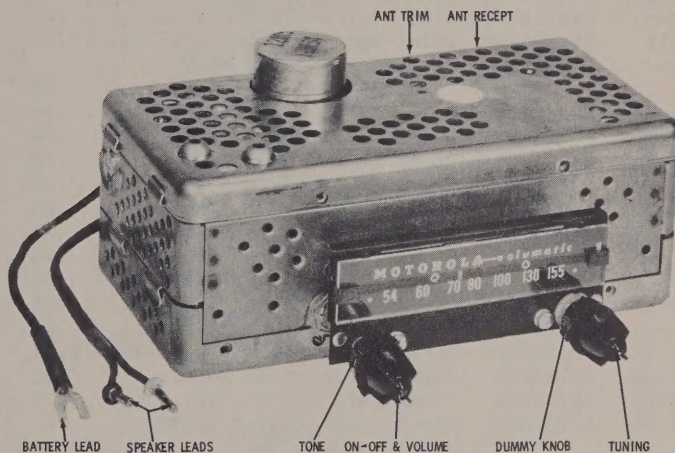
### GENERAL INFORMATION

**TYPE** - Universal automotive type superheterodyne receiver designed for custom in-dash installation by using an appropriate installation kit.

**TUNING RANGE** - 540 to 1600 Kc      **IF** - 455 Kc

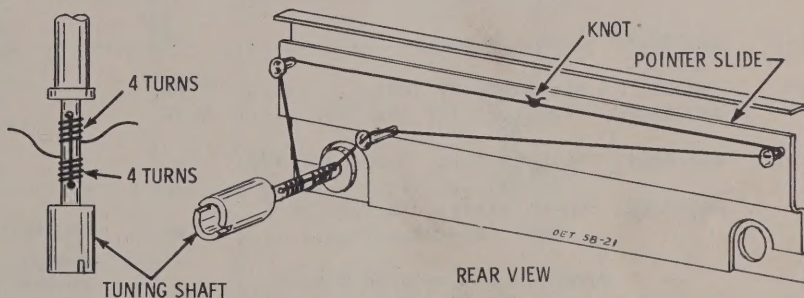
**OPERATES FROM** - Model 5M      6 volt storage battery  
Model 5M-12      12 volt storage battery

**TUBE COMPLEMENT** - Model 5M - 6BD6 RF amp; 6BE6 conv; 6BD6 IF amp, 6CR6 Det, AVC, AF amp; 6AQ5 AF output; 6X4 rect  
Model 5M-12 - 12BD6 RF amp; 12BE6 conv; 12BD6 IF amp; 12CR6 Det, AVC, AF amp; 12AQ5 AF output; 12X4 rect.



### POINTER REPLACEMENT AND CALIBRATION

Set tuner to high end stop. Place pointer on pointer slide and set to coincide with calibration dot furthest right. Crimp and cement pointer in place.



### DIAL RESTRINGING DETAIL

1. Thread a sufficient length of dial cord through two holes in shaft.
2. Wind 4 turns from each hole toward center of shaft as shown in detail
3. Thread over guides and tie knot as shown

### MOTOROLA AUTO RADIO WARRANTY SERVICE STATIONS PROCEDURE FOR BRANDED MODELS

1. The definition of a Motorola Branded Model is one that is branded with the Motorola name, and distributed to dealers through authorized Motorola Distributors.

2. Before performing a warranty repair on a Motorola Branded Auto Radio, you must first receive from the customer the Customer's Warranty Policy. This policy must be filled out by the selling dealer at the time of retail purchase. The Customer's Warranty Policy must show the radio to be within the ninety-day warranty period if the repair is to be handled under the Motorola Auto Radio Warranty Plan.

3. The removal or reinstallation of the radio, the elimination of motor noise, tire static, electrical interference, or faulty installation and aerial repairs are not considered as warranty repairs. Consequently, charges for these services are to be borne by the customer.

4. Fill in the Motorola Auto Radio Warranty Labor Claim, Part No. 54P480884, and mail White and Green copies to the Motorola Distributor serving your area. The Yellow copy is to be retained by the Warranty Service Station for his files.

5. Defective parts for warranty repairs made on Motorola Branded Auto Radios are to be sent to your Motorola Distributor for free replacement, supported with the defective parts return form which you are now using.

6. Only those service shops authorized by their Motorola Distributor can perform repairs within the warranty period on a no-charge basis to the customer. If you are not already authorized as a Motorola Auto Radio Warranty Service Station, and you are interested in handling this service, please contact your Motorola Distributor for complete details.

MOTOROLA, INC. 4545 AUGUSTA BLVD. CHICAGO 51, ILLINOIS

Part No. 68P533771

Price 10 cents

Printed in U.S.A.

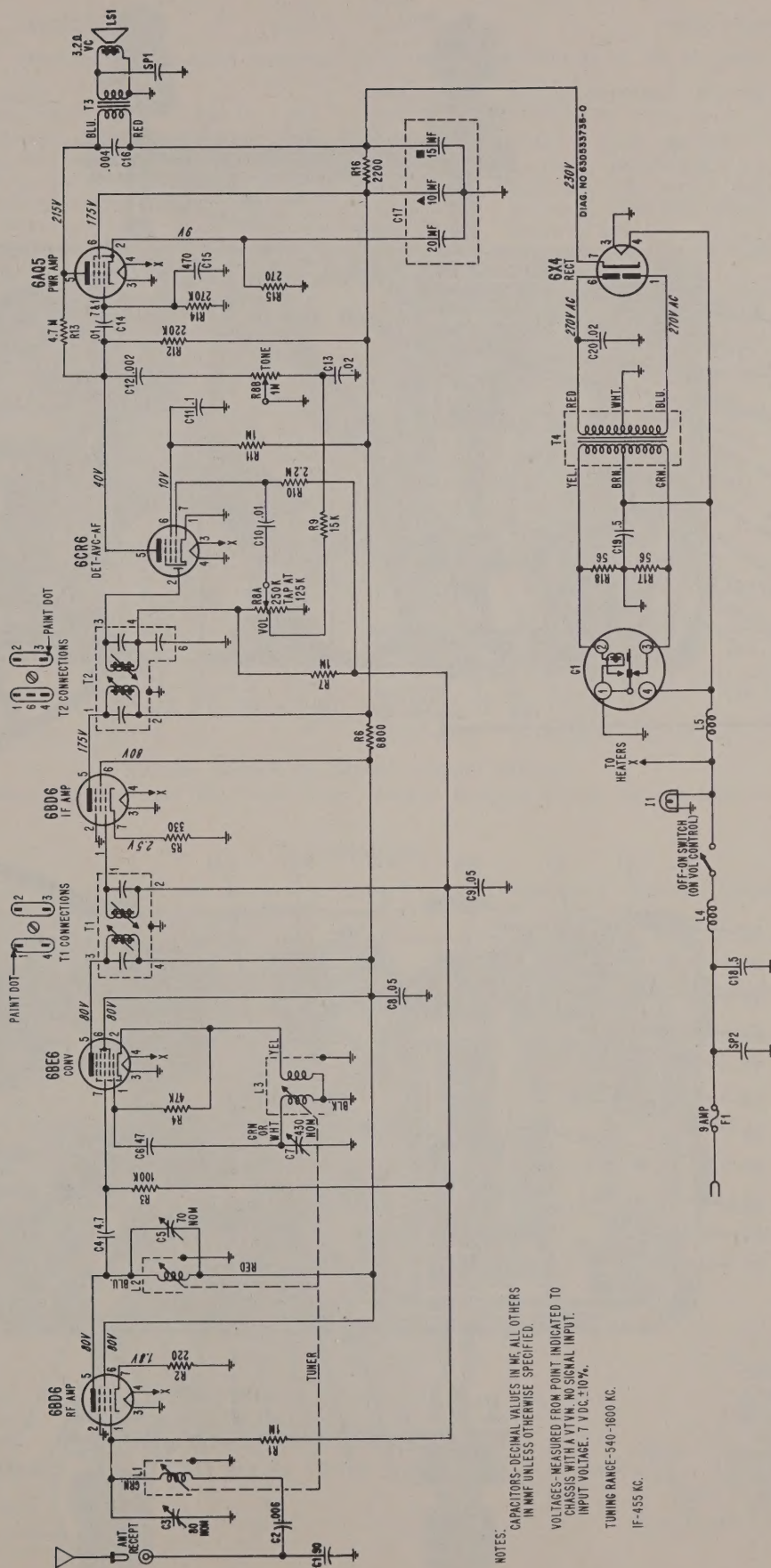


# REPLACEMENT PARTS LIST

NOTE: When ordering parts, specify model number of set in addition to part number and description of part.

Ref. No.	Part Number	Description	List Price	Ref. No.	Part Number	Description	List Price
<b>ELECTRICAL PARTS</b>				LS-1	50C533088		
Capacitors (Cer = Ceramic; Tub = Tubular; Mld = Molded; Lytic = Electrolytic)				or	50C532887		
C-1	21K533453	Mica, metal: 90 mmf 500V....	.25	or	50C534058		
C-2	8R121001	Paper Tub. .006 mf 400V....	.30	or	50C534059	Speaker, PM: 6" x 9"; 3.2 ohm VC.....	7.75**
C-3	20A502338	Trim, mica: 80 mmf nom.....	.45	SP-1,2	21A522033	Spark Plate.....	.25
C-4	21R115955	Mld; 4.7 mmf 500V.....	.25	T-1	24C485553	Trans, 1st IF: 455 Kc.....	1.45
C-5	20A481526	Trim, mica: 70 mmf nom.....	.30	T-2	24K485554	Trans, 2nd IF: 455 Kc.....	1.55
C-6	21R115593	Cer Disc: 47 mmf 500V		T-3	25B70171	Trans, output.....	2.05
		NTC 750 PPM.....	.25	T-4	25C534978	Trans, power (5M).....	4.45
C-7	20A485708	Trim, mica: 430 mmf nom....	.55		25C534979	Trans, power (5M-12).....	5.10
C-8	8R121567	Paper Tub. .05 mf 400V....	.25	TUNER	77K534238 (MT-156)		
C-9	8R121005	Paper Tub. .05 mf 200V....	.25		*77K534238	Tuner, MT-156: complete....	5.65
C-10	21R482726	Cer Disc: .01 mf 500V.....	.35	TUNER	77D534479 (MT-159)		
C-11	8R121006	Paper Tub. .1 mf 400V.....	.25		*77D534479	Tuner, MT-159: complete....	6.45
C-12	8K121568	Paper Tub. .002 mf 600V....	.30			exch	4.85
C-13	8R121003	Paper Tub. .02 mf 200V....	.25	Replacement parts for 77D534479 Tuner (MT-159):			
C-14	8R121002	Paper Tub. .01 mf 400V....	.25	L-1	*1K534998	Coil, antenna.....	.80
C-15	21R410121	Cer Disc: 470 mmf 500V....	.25	L-2	*1K534997	Coil, RF.....	.80
C-16	8R121000	Paper Tub. .004 mf 600V....	.35	L-3	*1K534999	Coil, osc.....	.60
C-17	23A485677	Lytic:10-15-20mf/350-350-25V	2.25		46A502505	Core, iron.....	.35
C-18	8K122076	Paper Tub. .5 mf 100V.....	.35		5A502510	Grommet (RF & ant coil mtg).	.02
C-19	8K122076	Paper Tub. .5 mf 100V.....	.35		5K502516	Grommet (osc coil mtg).....	.05
C-20	8R121004	Paper Tub. .02 mf 1000V			5A501013	Grommet (core mtg).....	.03
		(5M).....	.35		2A691432	Nut, speed (tuning shaft end)	.01
	8A121549	Paper Tub. .04 mf 1000V			2A502508	Nut, tension drive.....	.05
		(5M-12).....	.35		*22A533419	Pin, roll.....	.02
F-1	65X16248	Fuse: 9 amp.....	.05		*47K534889	Shaft, manual drive.....	.50
G-1	48B3333	Vibrator, 6V (5M).....	3.80		46A502506	Sleeve, iron.....	.35
	48B522000	Vibrator, 12V (5M-12).....	4.70		*4S122393	Washer, flat (tuning shaft end).....	.01
I-1	65X10867	Bulb, pilot: 6.3V-.25A #44			4A502517	Washer, paper (RF & ant coil mtg).....	.02
		(5M).....	.15	<b>MECHANICAL PARTS</b>			
	65T533821	Bulb, pilot: 12-16V-.2A		8A4491	Capacitor, noise (gen & volt reg).		.85
		#1891 (5M-12).....	.25	42B485548	Clip, IF mtg.....		.01
L-1	--	Coil, antenna (see Tuner)...	-	42A500196	Clip, ret (dial scale mtg).....		.02
L-2	--	Coil, RF (see Tuner).....	-	42A4215	Clip, vibrator ground.....		.10
L-3	--	Coil, osc (see Tuner).....	-	*15D532716	Cover, bottom.....		.80
L-4	*24K533822	Choke, RF.....	.10	*15D532713	Cover, top.....		.55
L-5	*24A533673	Choke, hash.....	.40	*1V533843	Dial Scale Mtg Assem.....		.75
Resistors - Note: All resistors are insulated carbon type unless otherwise specified				*36B533119	Knob (vol & tuning).....		.15
R-1	6R6004	1 meg 20% 1/2W.....	.15	*36B533120	Knob (dummy).....		.10
R-2	6R6270	220 10% 1/2W.....	.15	*36K533121	Knob (tone).....		.10
R-3	6R6075	100,000 20% 1/2W.....	.15	*2B521332	Nut, clinch.....		.01
R-4	6R6056	47,000 20% 1/2W.....	.15	2S7051	Nut, hex: 3/8"-32 x 9/16" (vol cont mtg).....		.01
R-5	6R6022	330 10% 1/2W.....	.15	*1K532594	Pointer.....		.20
R-6	6R5690	6800 10% 2W.....	.25	9K592648	Recept, fuse.....		.85
R-7	6R6004	1 meg 20% 1/2W.....	.15	5K13896	Rivet, shoulder: long (dial cord guide).....		.01
R-8	*18K533457	Vol & Tone Control: vol		5K12814	Rivet, shoulder: short (dial cord guide).....		.01
		250K - tap 125K; tone 1 meg incl sw.....	2.05	*34B533980	Scale, dial.....		.15
R-9	6R2119	15,000 20% 1/2W.....	.15	*47B532599	Shaft, manual tuning extension....		.55
R-10	6R3927	2.2 meg 20% 1/2W.....	.15	9A530168	Socket, antenna.....		.20
R-11	6R6004	1 meg 20% 1/2W.....	.15	*9K533458	Socket, pilot light.....		.20
R-12	6R6015	220,000 20% 1/2W.....	.15	9R119819	Socket, tube: 7-pin min; with dummy lug.....		.15
R-13	6R2122	4.7 meg 20% 1/2W.....	.15	9A70208	Socket, 4 prong (vib).....		.20
R-14	6R6414	270,000 10% 1/2W.....	.15	6A4141	Suppressor (distributor lead)....		.30
R-15	6R6432	270 10% 1/2W.....	.15	29A76280	Term, pin: blk (spkr cable).....		.03
R-16	6R476130	2200 20% 2W.....	.25	29K76282	Term, pin: wht (spkr cable).....		.03
R-17	6R2037	56 10% 1W (5M).....	.20	4K24124	Washer, "C" (manual extension shaft).....		.01
	6R6389	220 10% 1W (5M-12).....	.20				
R-18	6R2037	56 10% 1W (5M).....	.20				
	6R6389	220 10% 1W (5M-12).....	.20				





NOTES: CAPACITORS-DECIMAL VALUES IN MF, ALL OTHERS IN MMF UNLESS OTHERWISE SPECIFIED.

VOLTAGES-MEASURED FROM POINT INDICATED TO CHASSIS WITH A VTVM; NO SIGNAL INPUT.

TUNING RANGE-540-1600 KC.

IF-455 KC.

MODEL 5M SCHEMATIC DIAGRAM



# REPLACEMENT PARTS LIST

NOTE: When ordering parts, specify model number of set in addition to part number and description of part.

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C-2	8R121001	Paper Tub. .006 mf 400V....	.30	or	50C534059	Speaker, PM: 6" x 9"; 3.2 ohm VC.....	7.75**
C-3	20A502338	Trim, mica: 80 mmf nom.....	.45	SP-1,2	21A522033	Spark Plate.....	.25
C-4	21R115955	Mld: 4.7 mmf 500V.....	.25	T-1	24C485553	Trans, 1st IF: 455 Kc.....	1.45
C-5	20A481526	Trim, mica: 70 mmf nom.....	.30	T-2	24K485554	Trans, 2nd IF: 455 Kc.....	1.55
C-6	21R115593	Cer Disc: 47 mmf 500V NTC 750 PPM.....	.25	T-3	25B70171	Trans, output.....	2.05
C-7	20A485708	Trim, mica: 430 mmf nom.....	.55	T-4	25C534978	Trans, power (5M).....	4.45
C-8	8R121567	Paper Tub. .05 mf 400V....	.25		25C534979	Trans, power (5M-12).....	5.10
C-9	8R121005	Paper Tub. .05 mf 200V....	.25	TUNER	77K534238 (MT-156)		
C-10	21R482726	Cer Disc: .01 mf 500V.....	.35		*77K534238	Tuner, MT-156: complete....	5.65
C-11	8R121006	Paper Tub. .1 mf 400V.....	.25	TUNER	77D534479 (MT-159)		
C-12	8K121568	Paper Tub. .002 mf 600V....	.30		*77D534479	Tuner, MT-159: complete....	6.45
C-13	8R121003	Paper Tub. .02 mf 200V....	.25			exch	4.85
C-14	8R121002	Paper Tub. .01 mf 400V....	.25	Replacement parts for 77D534479 Tuner (MT-159):			
C-15	21R410121	Cer Disc: 470 mmf 500V....	.25	L-1	*1K534998	Coil, antenna.....	.80
C-16	8R121000	Paper Tub. .004 mf 600V....	.35	L-2	*1K534997	Coil, RF.....	.80
C-17	23A485677	Lytic:10-15-20mf/350-350-25V	2.25	L-3	*1K534999	Coil, osc.....	.60
C-18	8K122076	Paper Tub. .5 mf 100V.....	.35		46A502505	Core, iron.....	.35
C-19	8K122076	Paper Tub. .5 mf 100V.....	.35		5A502510	Grommet (RF & ant coil mtg).	.02
C-20	8R121004	Paper Tub. .02 mf 1000V (5M).....	.35		5K502516	Grommet (osc coil mtg).....	.05
	8A121549	Paper Tub. .04 mf 1000V (5M-12).....	.35		5A501013	Grommet (core mtg).....	.03
F-1	65X16248	Fuse: 9 amp.....	.05		2A691432	Nut, speed (tuning shaft end)	.01
G-1	48B3333	Vibrator, 6V (5M).....	3.80		2A502508	Nut, tension drive.....	.05
	48B522000	Vibrator, 12V (5M-12).....	4.70		*22A533419	Pin, roll.....	.02
I-1	65X10867	Bulb, pilot: 6.3V-.25A #44 (5M).....	.15		*47K534889	Shaft, manual drive.....	.50
	65T533821	Bulb, pilot: 12-16V-.2A #1891 (5M-12).....	.25		46A502506	Sleeve, iron.....	.35
L-1	--	Coil, antenna (see Tuner)...	-		*4S122393	Washer, flat (tuning shaft end).....	.01
L-2	--	Coil, RF (see Tuner).....	-		4A502517	Washer, paper (RF & ant coil mtg).....	.02
L-3	--	Coil, osc (see Tuner).....	-	<b>MECHANICAL PARTS</b>			
L-4	*24K533822	Choke, RF.....	.10	8A4491	Capacitor, noise (gen & volt reg).		.85
L-5	*24A533673	Choke, hash.....	.40	42B485548	Clip, IF mtg.....		.01
Resistors - Note: All resistors are insulated carbon type unless otherwise specified				42A500196	Clip, ret (dial scale mtg).....		.02
R-1	6R6004	1 meg 20% 1/2W.....	.15	42A4215	Clip, vibrator ground.....		.10
R-2	6R6270	220 10% 1/2W.....	.15	*15D532716	Cover, bottom.....		.80
R-3	6R6075	100,000 20% 1/2W.....	.15	*15D532713	Cover, top.....		.55
R-4	6R6056	47,000 20% 1/2W.....	.15	*1V533843	Dial Scale Mtg Assem.....		.75
R-5	6R6022	330 10% 1/2W.....	.15	*36B533119	Knob (vol & tuning).....		.15
R-6	6R5690	6800 10% 2W.....	.25	*36B533120	Knob (dummy).....		.15
R-7	6R6004	1 meg 20% 1/2W.....	.15	*36K533121	Knob (tone).....		.10
R-8	*18K533457	Vol & Tone Control: vol 250K - tap 125K; tone 1 meg incl sw.....	2.05	*2B521332	Nut, clinch.....		.01
R-9	6R2119	15,000 20% 1/2W.....	.15	2S7051	Nut, hex: 3/8"-32 x 9/16" (vol cont mtg).....		.01
R-10	6R3927	2.2 meg 20% 1/2W.....	.15	*1K532594	Pointer.....		.20
R-11	6R6004	1 meg 20% 1/2W.....	.15	9K592648	Recept, fuse.....		.85
R-12	6R6015	220,000 20% 1/2W.....	.15	5K13896	Rivet, shoulder: long (dial cord guide).....		.01
R-13	6R2122	4.7 meg 20% 1/2W.....	.15	5K12814	Rivet, shoulder: short (dial cord guide).....		.01
R-14	6R6414	270,000 10% 1/2W.....	.15	*34B533980	Scale, dial.....		.15
R-15	6R6432	270 10% 1/2W.....	.15	*47B532599	Shaft, manual tuning extension....		.55
R-16	6R476130	2200 20% 2W.....	.25	9A530168	Socket, antenna.....		.20
R-17	6R2037	56 10% 1W (5M).....	.20	*9K533458	Socket, pilot light.....		.20
	6R6389	220 10% 1W (5M-12).....	.20	9R119819	Socket, tube: 7-pin min; with dummy lug.....		.15
R-18	6R2037	56 10% 1W (5M).....	.20	9A70208	Socket, 4 prong (vib).....		.20
	6R6389	220 10% 1W (5M-12).....	.20	6A4141	Suppressor (distributor lead).....		.30
				29A76280	Term, pin: blk (spkr cable).....		.03
				29K76282	Term, pin: wht (spkr cable).....		.03
				4K24124	Washer, "C" (manual extension shaft).....		.01



Part Number	Description	List Price	Part Number	Description	List Price
The following parts list contains replacement mounting parts for installing 5M or 5M-12 radio in specific cars.					
<b>BUICK - 1955 &amp; 1954 (AK-150)</b>					
*7K533687	Bracket, radio mtg.....	.25	3S122085	Screw, machine: chrome plated....	.01
*7K533690	Bracket, spkr mtg.....	.10	13C534017	Trimplate.....	1.50
*1V533924	Front Mtg Bracket & Bushing Assem.	.50	<b>OLDSMOBILE - 1955 &amp; 1954 (AK-151)</b>		
32K520099	Gasket, spkr.....	.60	*7A534081	Bracket, radio mtg.....	.10
2S2876	Nut, hex: 1/2-28 (front mtg).....	.01	*43K534087	Bushing, spkr mtg (long).....	.50
*1V533922	Plate, spkr mtg.....	2.95	*43A534084	Bushing, spkr mtg (short).....	.35
*3S122085	Screw, machine: chrome plated....	.01	*32D534093	Gasket, spkr.....	.80
*13B533802	Trimplate.....	1.55	*1V534124	Front Mtg Bracket & Bushing Assem (LH).....	.70
<b>CHEVROLET - 1955 (AK-154)</b>					
*7B534201	Bracket, radio mtg.....	.15	*1V534125	Front Mtg Bracket & Bushing Assem (RH).....	.75
*7B534215	Bracket, spkr plate mtg (bot).....	.05	2S2882	Nut, hex: 1/2-28 (front mtg).....	.01
*7B534176	Bracket, spkr plate mtg (top).....	.05	*1V534122	Plate, spkr mtg.....	2.05
*1V534243	Front Mtg Bracket & Bushing Assem (LH).....	.45	*13D534044	Trimplate.....	2.25
*1V534244	Front Mtg Bracket & Bushing Assem (RH).....	.45	<b>PONTIAC - 1955 (AK-155)</b>		
*32D534214	Gasket, spkr.....	.80	*7B534815	Bracket, radio mtg.....	.25
2S2876	Nut, hex: 1/2-28 (front mtg).....	.01	*7K534823	Front Mtg Bracket (LH).....	.45
*64C534096	Plate, spkr mtg.....	1.15	*7C534820	Front Mtg Bracket (RH).....	.45
*13B534210	Trimplate.....	1.50	*32C534818	Gasket, speaker.....	.80
3S122085	Screw, machine: chrome plated....	.01	*1V534852	Plate, speaker mtg.....	2.95
			*13D534829	Trimplate.....	1.55
<b>CHEVROLET - 1954 &amp; 1953 (AK-153)</b>					
*7B534015	Bracket, radio mtg.....	.25	<b>STUDEBAKER - 1955 Starline &amp; Starlight Models only, 1954 &amp; 1953 All Models (AK-152)</b>		
7K530107	Bracket, sprk mtg (LH).....	.30	*1V534187	Front Mtg Bracket & Bushing Assem.	.70
7C530104	Bracket, spkr mtg (RH).....	.30	32C521820	Gasket, spkr.....	.70
*1V534041	Front Mtg Bracket & Bushing Assem.	.45	*1V534185	Plate, spkr mtg.....	3.90
32C530122	Gasket, spkr.....	1.30	2S2879	Nut, hex: 7/16-28 (front mtg).....	.02
2S8397	Nut, hex: 1/2-28 (front mtg).....	.03	*2A533995	Nut, trim.....	.30
			*13D534010	Trimplate.....	3.10

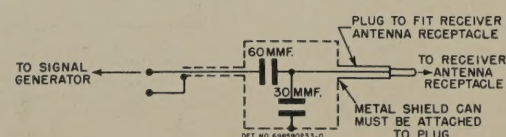
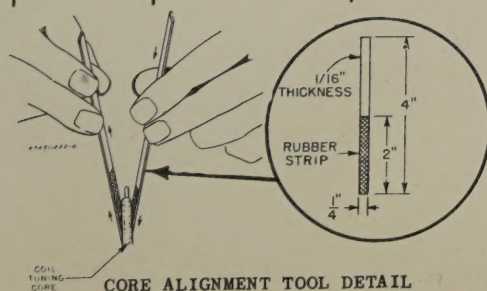
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

\*New Item, Appears in any List for First Time \*\*Plus Federal Excise Tax at Current Rate

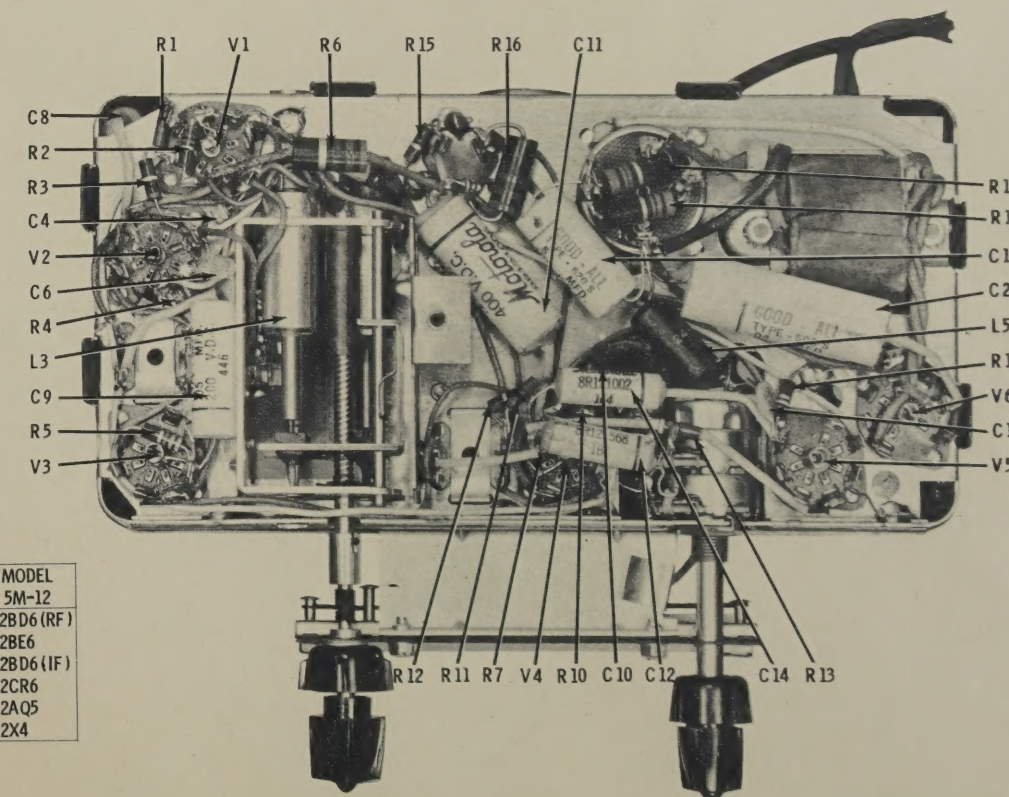
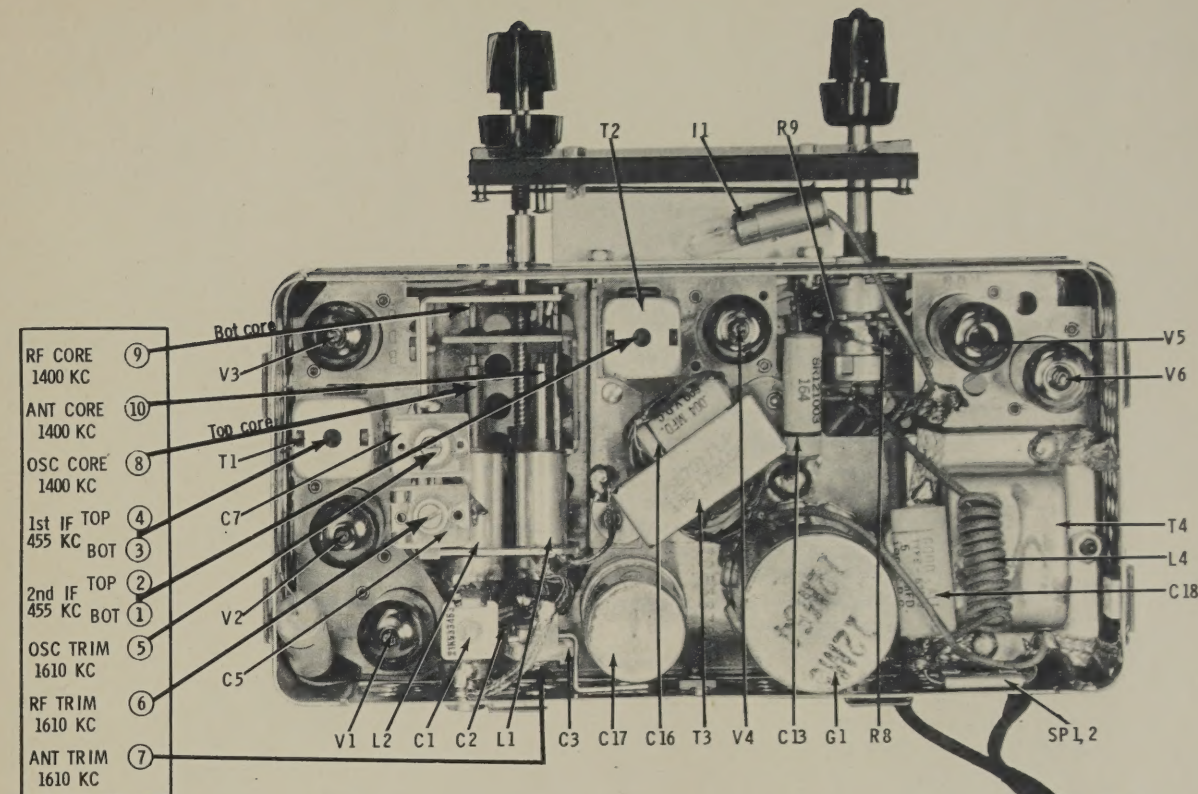
## ALIGNMENT

Connect output meter across speaker voice coil. Set tone to high and volume to maximum. Attenuate generator to maintain 1.79 volts (1 watt) on output meter to prevent overloading of receiver.

STEP	DUMMY ANTENNA	GENERATOR CONNECTION	GENERATOR FREQUENCY	TUNER SET TO	ADJUST (in order shown)	REMARKS
IF ALIGNMENT						
1.	.1 mf	6BE6 grid (pin 7)	455 Kc	Hi end stop	1, 2, 3, 4	Peak for maximum.
RF ALIGNMENT						
NOTE: Back tuner cores completely out of coils before proceeding.						
2.	See Fig.	Ant. recept	1610 Kc	Hi end stop	5, 6, 7	Peak for maximum
3.	See Fig.	Ant. recept	1400 Kc	13/64" from hi end stop	8, 9, 10	Peak for maximum using alignment tools shown in Figure.
4.	Repeat steps 2 and 3 until no further increase.					
ANTENNA TRIMMER ADJUSTMENT						
5.				Weak station around 1400 Kc	7	With radio in car, peak ant trimmer.



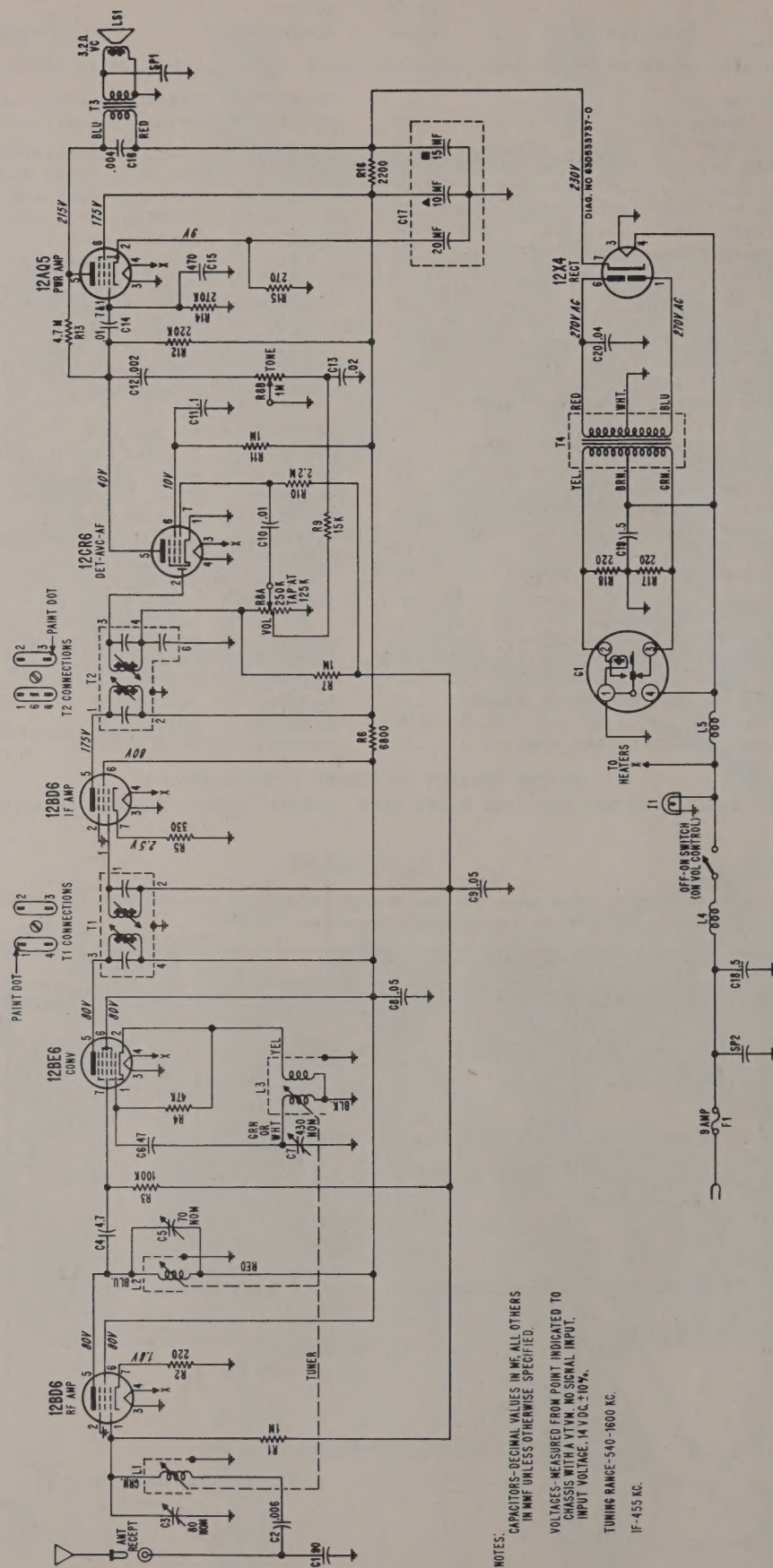
DUMMY ANTENNA DETAIL



TUBES		
REF. NO.	MODEL 5M	MODEL 5M-12
V1	6BD6 (RF)	12BD6 (RF)
V2	6BE6	12BE6
V3	6BD6 (IF)	12BD6 (IF)
V4	6CR6	12CR6
V5	6AQ5	12AQ5
V6	6X4	12X4

ALIGNMENT ADJUSTMENTS & PARTS LOCATIONS





NOTES:  
 CAPACITORS-DECIMAL VALUES IN MF, ALL OTHERS  
 IN MMF UNLESS OTHERWISE SPECIFIED.  
 VOLTAGES-MEASURED FROM POINT INDICATED TO  
 CHASSIS WITH A VTVM, NO SIGNAL INPUT,  
 INPUT VOLTAGE, 14 VDC  $\pm 10\%$ .  
 TUNING RANGE-540-1600 KC.  
 IF-455 KC.

MODEL 5M-12 SCHEMATIC DIAGRAM